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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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| 09/202,267 | 12/09/98 | NISHIKAWA | T P3297B |

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EPSON RESEARCH AND DEVELOPMENT INC
INTELLECTUAL PROPERTY DEPT
150 RIVER OAKS PARKWAY, SUITE 225
SAN JOSE CA 95134

EXAMINER

TUGBANG, D

| ART UNIT | PAPER NUMBER |
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3729

12

DATE MAILED:

07/09/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trad marks

Office Action Summary

Application No.

09/202,267

Applicant(s)

NISHIKAWA ET AL.

Examiner

Dexter Tugbang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2001.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) 5, 11-13, 15-17, 21, 27-29 and 31-33 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10, 14, 18-20, 22-26 and 30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 1998 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 3, 5, 9.
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election **without** traverse of the invention of Species A, C and F, in Paper No. 10 is acknowledged.
2. Claims 5, 11-13, 15-17, 21, 27-29 and 31-33 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 11. The requirement is deemed proper and is therefore made FINAL.

Drawings

3. The drawings are objected to because Figures 11 and 12 should be designated by a legend as --**Prior Art**-- because only that which is old is illustrated. See MPEP § 608.02(g).
4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the limitations of a *recess of the relief pattern formed on the green sheet with a tapered shape having an opening larger than a bottom* (in Claims 10 and 26) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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6. Claims 10 and 26 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In each of Claims 10 and 26, the phrase "larger than a bottom" (line 4) is confusing, misleading, and appears to be incomplete. What bottom is being referred to or what previously recited element having any bottom whatsoever is being referred to? The phrase is unascertainable and renders the scope of the claim as indefinite.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 18-20, 22, 23, 26 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Japanese Patent Publication JP 5-286141, referred to hereinafter as JP' 141.

JP' 141 teaches the claimed *final product* of an ink jet printer head comprising a head base (nozzle plate 10) and a nozzle port 11 for discharging the ink on the head base. Claims 18-20, 22, 23, 26 and 30 are interpreted as Product-by-Process Claims. As such, Applicants are referred to MPEP § 2113 which states:

"[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)

Regarding Claim 18, the limitations drawn to the green sheet having a relief pattern and the coating and stripping steps have not been given any patentable weight as these limitations do not patentably further limit the claimed product of the ink jet head. The green sheet is not considered even part of the finished product of the ink jet head.

Regarding dependent Claims 19, 20, 22, 23, 26 and 30, the method limitations drawn to the green sheet, as well as imparting energy and a lithographic method, have also not been any patentable weight as these limitations do not patentably further limit the claimed product of an ink jet head.

9. Claims 1, 2, 6, 7, 14, 18-20, 22, 23 and 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Trueba 5,560,837.

With regards to Claims 1, 2, 6, 7 and 14, Trueba discloses the claimed manufacturing method (noting Figures 2A-2L) comprising: manufacturing a green sheet of a glass substrate material 201 by forming a resist layer 209 having a relief pattern of a recess surrounding a central pillar (shown in Figure 2E); photolithographically etching the relief pattern on the green sheet substrate (shown in Figures 2F-2J); coating a solidifying material 217 to form a head base (shown in Figure 2K); stripping off the head base from the green sheet by peeling off the green sheet (see block 333 in Fig. 3); and forming the nozzle port with the use of the central pillar 205', 211' on the green sheet prior to stripping the green sheet.

With regards to Product-by-Process Claims 18-20, 22, 23 and 30, if Applicants believe that the product can only be made by the recited process, then Claims 18-20, 22, 23 and 30 are alternatively rejected by Trueba for the same reasons of Claims 1, 2, 6, 7 and 14 stated above.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trueba.

Regarding Claims 3 and 4, it would have been an obvious matter of engineering design choice to choose any desired substrate material of the green sheet, since Applicants have not disclosed that the claimed green sheet substrate material of *silicon* or *quartz glass* solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the glass substrate material taught by Trueba.

12. Claims 8, 9, 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trueba in view of Moynihan et al 5,640,184.

Trueba teaches the claimed manufacturing method as previously discussed. Trueba does not teach that the head base is made of a thermoplastic substance, more specifically a hydrated glass.

Moynihan suggests that a head base can be made from thermoplastic materials of alumina or *glass* to provide the head base material with a thermal expansion coefficient compatible with adjacent components to be used in operation of an ink jet print head (see col. 14, lines 10-18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the head base of Moynihan by forming the head base with thermoplastic materials of glass, as taught by Moynihan, to positively provide a head base with a

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thermal expansion coefficient compatible with adjacent components to be used in the operation of the ink jet print head.

It is noted that the Applicants recite specific material limitations in Claims 9 and 25, i.e. that the glass is "hydrated". However, such limitations must result in a manipulative difference in the recited process steps as compared to the prior art. In this instance these material limitations are held to be obvious and not given patentable weight in these method of manufacturing claims as such limitation(s) do not result in any difference in the *claimed* manufacturing process.

13. Claims 10 and 26, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Trueba in view of Sachdev et al 5,470,693.

Trueba teaches the claimed manufacturing method as previously discussed. Trueba does not teach that the recess of the relief pattern has a tapered shape with the opening on the top of the resist relief pattern having a larger opening than on the bottom of the resist relief pattern. The recess of Trueba, which surrounds a central pillar, appears to have straight vertical walls.

Sachdev teaches a lithographic process in which a resist relief pattern 7 (in Fig. 1C) is formed with a tapered shape where the opening on the top of the pattern is larger than the opening on the bottom of the pattern. Such an advantage of the tapered profile allows the member being etched under the resist relief pattern to retain a good image profile structure having a high resolution (see col. 8, lines 46-54).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the resist relief pattern of Trueba by forming a tapered shape, as


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taught by Sachdev, to advantageously form the layers being etched under the resist relief pattern to retain a good image profile structure having a high resolution.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

15. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Dexter Tugbang whose telephone number is 703-308-7599. The Examiner can normally be reached on Monday - Friday 7:00 am - 4:30 pm.


S. THOMAS HUGHES
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700

adt
June 30, 2001